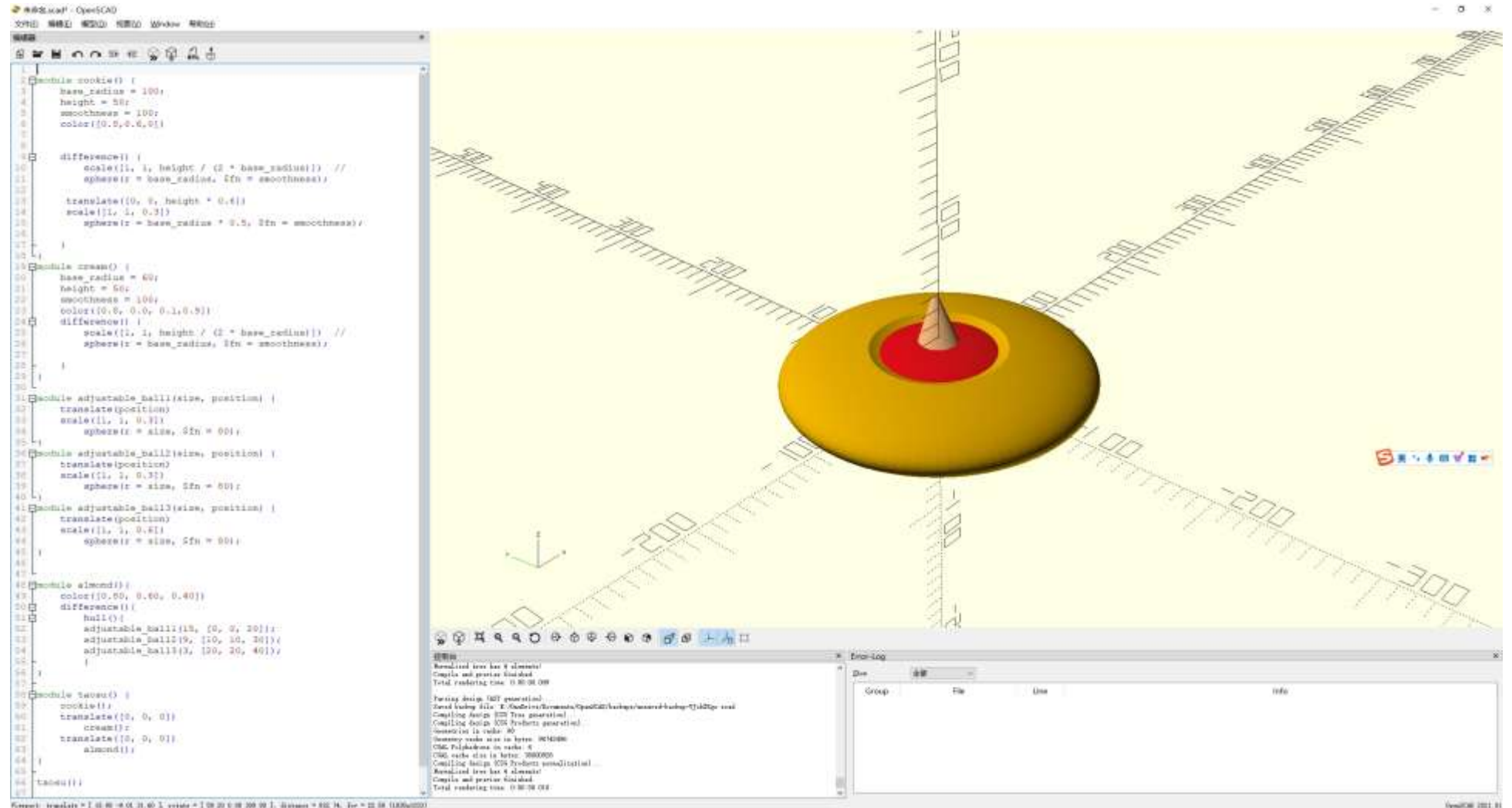


Model rendering and animation

Group members:

Model making by Openscad

- Cookie:

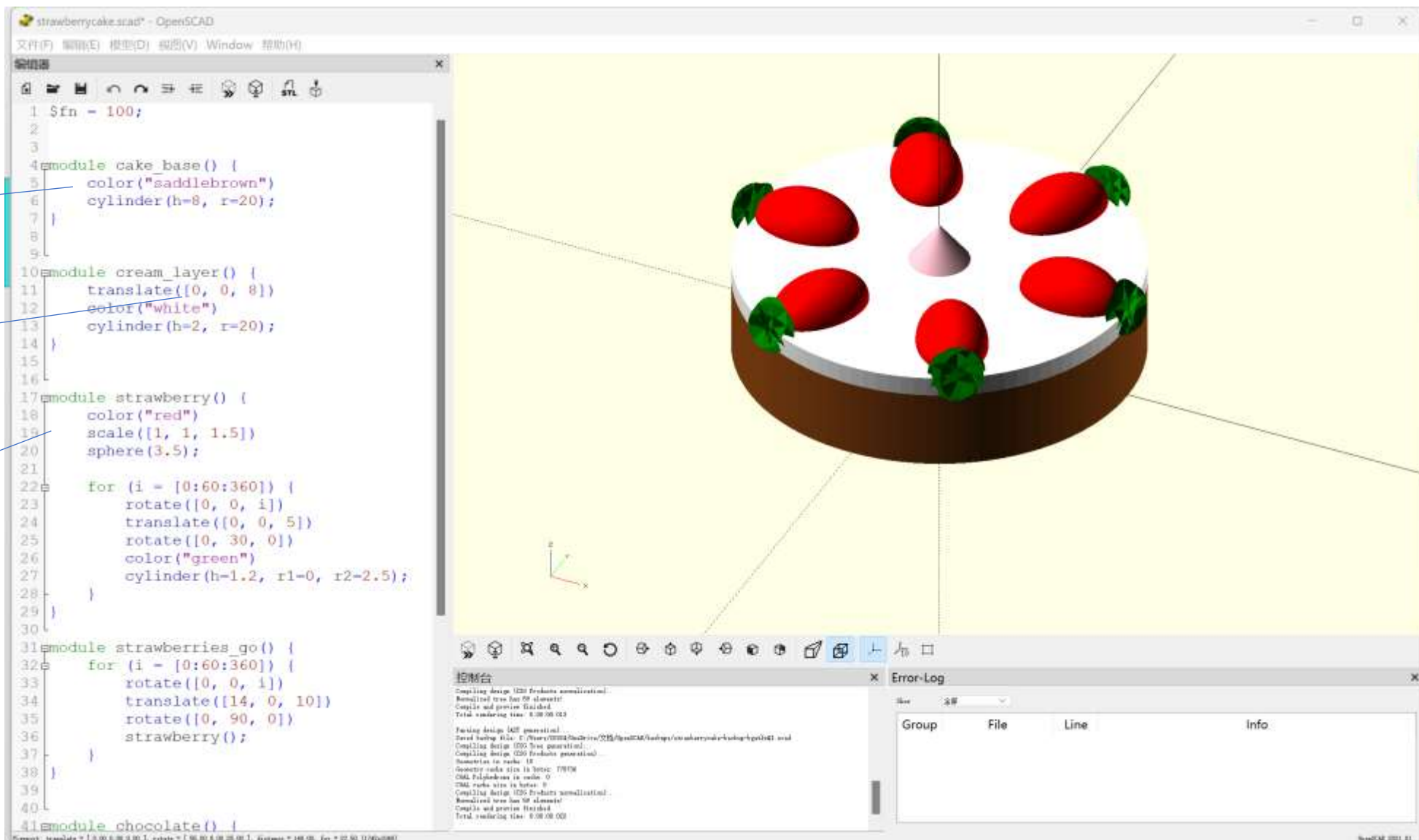


- Cake:

Create cake
base

Create cake
layer

Create
strawberry

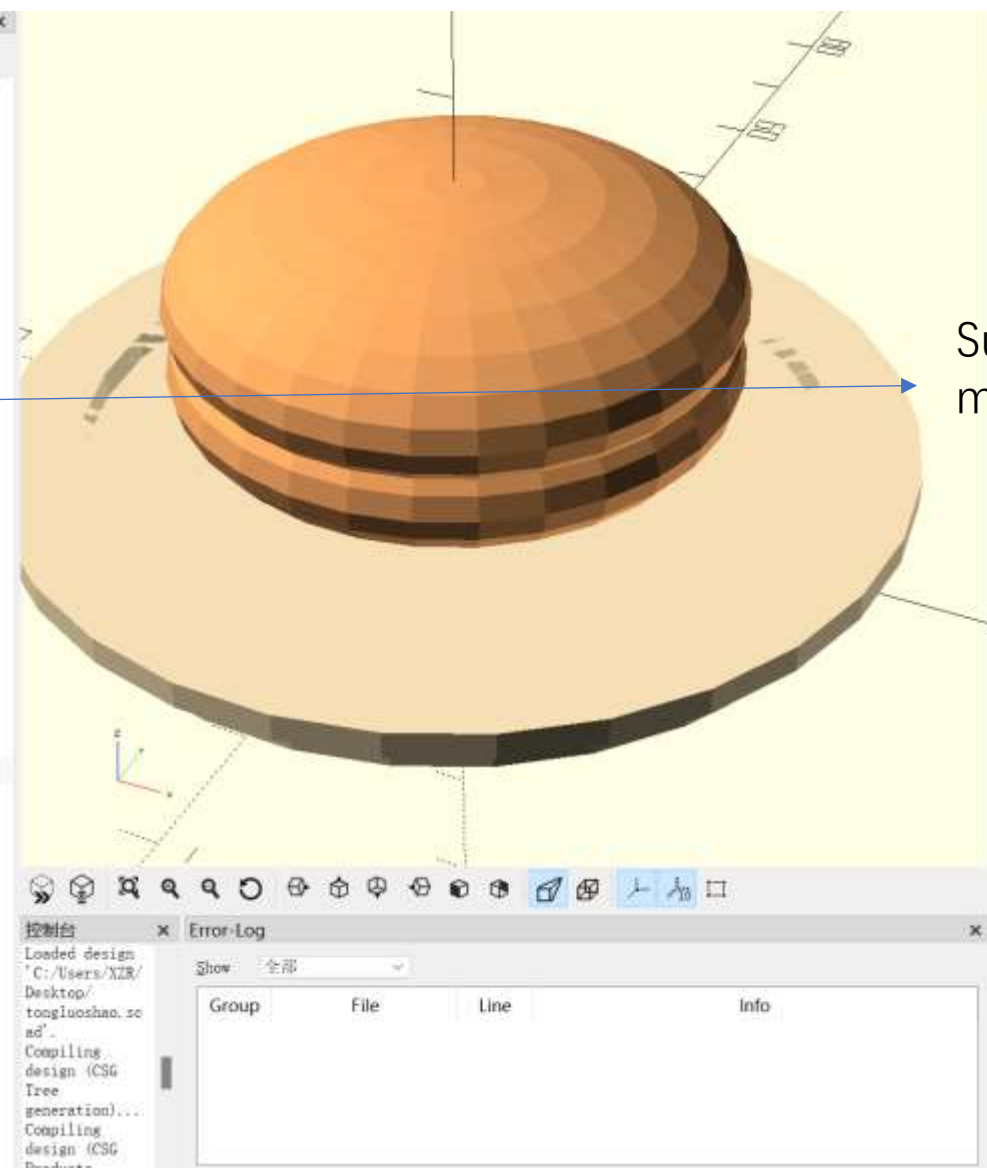


- Dorayaki:

Creating the base of the plate

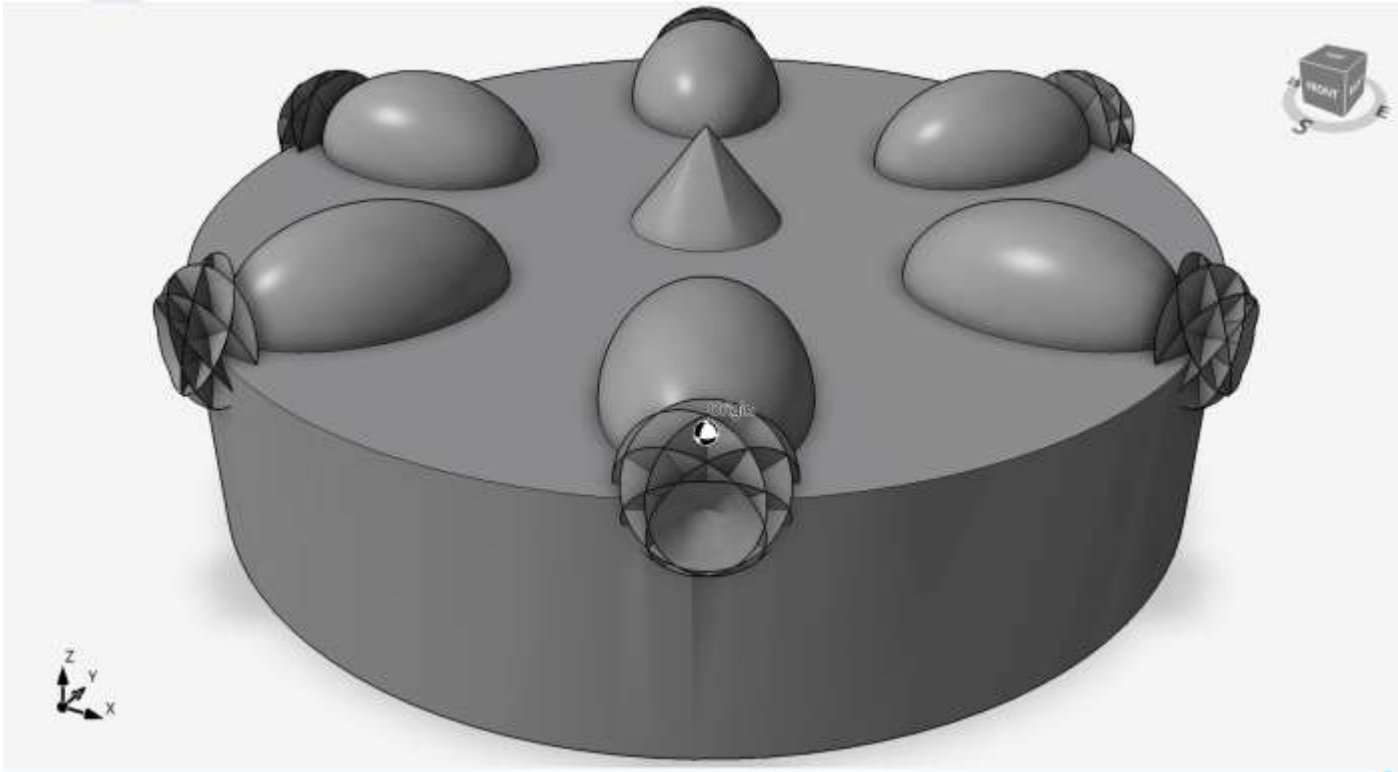
First set it to a circle and then flatten it on the Z axis

```
1
2 module plate() {
3   color("wheat")
4   difference() {
5     union() {
6       cylinder(h=3, d=60);
7       hull() {
8         translate([0, 0, 3]) cylinder(h=2, d=65);
9         translate([0, 0, 3]) cylinder(h=1, d=55);
10      }
11     }
12   translate([0, 0, 3])
13   cylinder(h=2, d=53);
14 }
15
16 module dorayaki_top() {
17   color("sandybrown")
18   scale([1,1,0.4]) sphere(20);
19 }
20
21
22 module dorayaki_bottom() {
23   color("sandybrown")
24   translate([0,0,-5])
25   scale([1,1,0.4]) sphere(20);
26 }
27
28
29 module dorayaki() {
30   dorayaki_bottom();
31   dorayaki_filling();
32   dorayaki_top();
33 }
34
35 plate();
36 translate([0, 0, 16]) dorayaki();
37
38
```

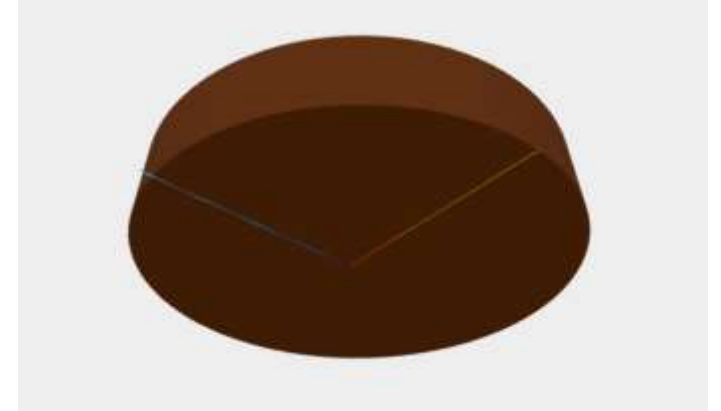
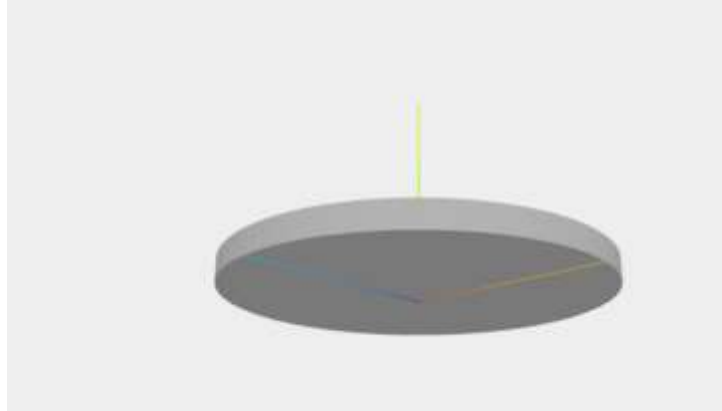
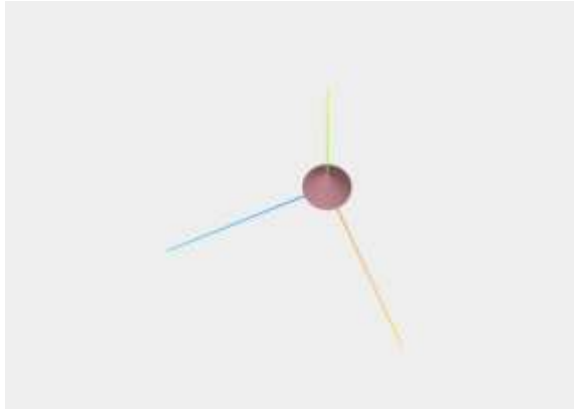


Subtract the middle part

- The stl file of openscad has no color information :



Moreover, each model in three.js can only be dyed one color, so we took each part apart, dyed it separately, and then put it together.



Cake



Three.js code

```
<script type="module">
  import * as THREE from 'three';
  import { STLLoader } from 'STLLoader';
  import { OrbitControls } from 'OrbitControls';

  let scene, camera, renderer, controls;
  let cakeGroup = new THREE.Group();
  let dorayakiGroup = new THREE.Group();
  let cookieGroup = new THREE.Group();
  function init() {

    scene = new THREE.Scene();
    scene.background = new THREE.Color(0xeeeeee);
    camera = new THREE.PerspectiveCamera(75, window.innerWidth / window.innerHeight, 0.1, 1000);
    camera.position.set(0, 20, 50);
    camera.lookAt(0, 0, 0);
    renderer = new THREE.WebGLRenderer({ antialias: true });
    renderer.setSize(window.innerWidth, window.innerHeight);
    document.body.appendChild(renderer.domElement);

    const axesHelper = new THREE.AxesHelper(20); // 轴的长度为 20
```

Create three groups: cake, dorayaki and cookie

Set basic setting


```
//dorayaki
loadSTL(loader, "./bottom.stl", 0xD2691E, new THREE.Vector3(0, 7, -7), 0.5, dorayakiGroup);
loadSTL(loader, "./top.stl", 0xD2691E, new THREE.Vector3(0, 9, -2), /*put the object in the right place*/ 0.5, dorayakiGroup);
loadSTL(loader, "./plate.stl", 0xEED5B7, new THREE.Vector3(0, 0, 0), 0.5, dorayakiGroup);
scene.add(dorayakiGroup);
```

Set the size

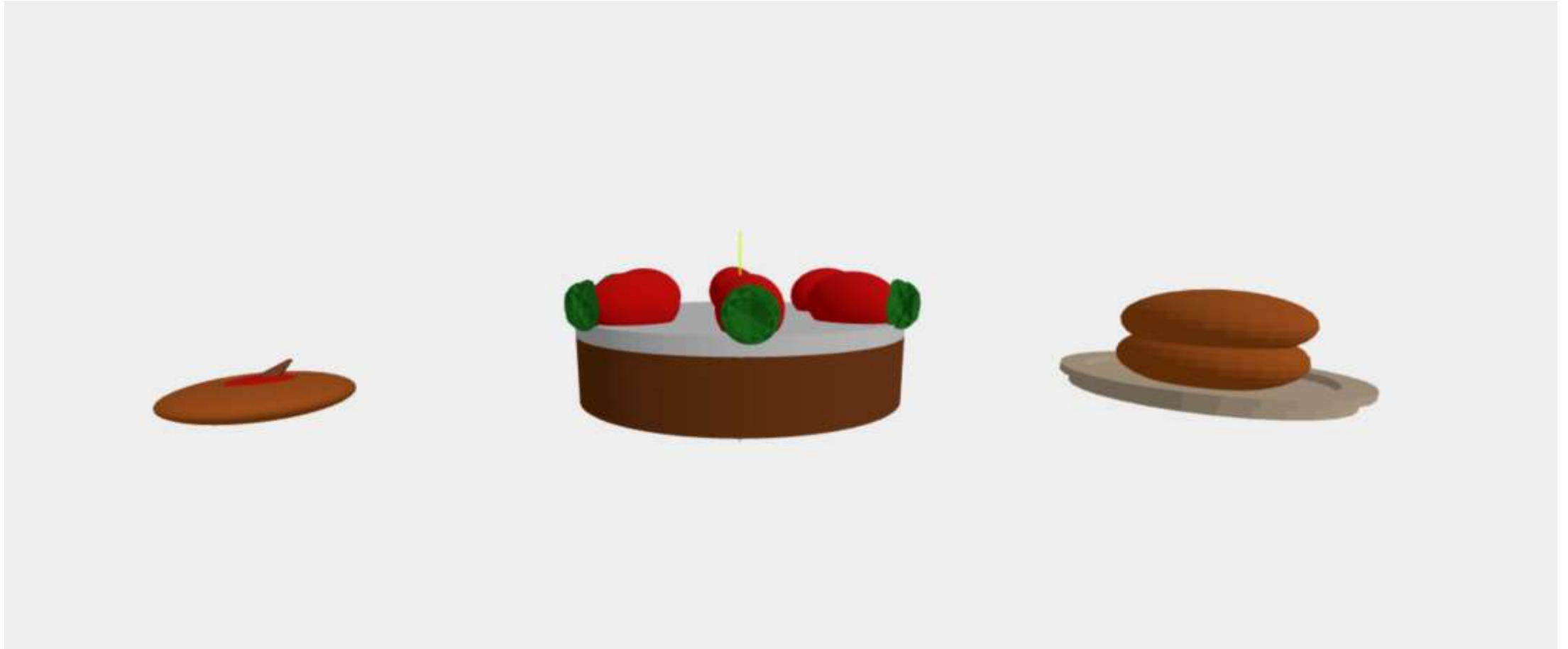
Dye these parts with right color

```
//cake
loadSTL(loader, "./strawberrycakebase.stl", 0x8B4513, new THREE.Vector3(0, 0, 3), 1, cakeGroup);
loadSTL(loader, "./strawberrycakecream.stl", 0xFFFFFFFF, new THREE.Vector3(0, 0, 8), 1, cakeGroup);
loadSTL(loader, "./chocolate.stl", 0xFFB6C1, new THREE.Vector3(0, 0, 12), 1, cakeGroup);
for (let i = 0; i < 6; i++) {
  let angle = i * 60;
  let strawberryLeafGroup = new THREE.Group();
  loadSTL(loader, "./strawberry.stl", 0xFF0000, new THREE.Vector3(-1, 0, 0), 1, strawberryLeafGroup);
  loadSTL(loader, "./leaf.stl", 0x228B22, new THREE.Vector3(-1, 0, 6), 1, strawberryLeafGroup);
  strawberryLeafGroup.rotation.x = -Math.PI / 2;
  strawberryLeafGroup.rotation.z = angle * Math.PI / 180;
  let radius = 14;
  strawberryLeafGroup.translateOnAxis(new THREE.Vector3(0, 0, 1), 12);
  strawberryLeafGroup.translateOnAxis(new THREE.Vector3(0, 1, 0), radius);
  cakeGroup.add(strawberryLeafGroup);
}
scene.add(cakeGroup);
```



```
//cookie  
loadSTL(loader, "./cookiebase.stl", 0xD2691E, new THREE.Vector3(0, 0, 0), 0.1, cookieGroup);  
loadSTL(loader, "./cookiecream.stl", 0xFF0000, new THREE.Vector3(0, 0, 1), 0.1, cookieGroup);  
loadSTL(loader, "./cookiealmond.stl", 0xA0522D, new THREE.Vector3(4, 4, 29), 0.1, cookieGroup);  
scene.add(cookieGroup);
```

Overall effect diagram



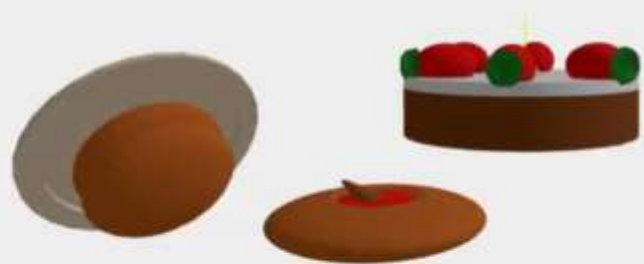
Animation:

```
let cookieRadius = 60;
cookieGroup.position.x = Math.cos(elapsedTime) * cookieRadius;
cookieGroup.position.z = Math.sin(elapsedTime) * cookieRadius;
cookieGroup.rotation.y += 0.05;

let dorayakiRadius = 60;
dorayakiGroup.position.x = Math.cos(-elapsedTime) * dorayakiRadius;
dorayakiGroup.position.z = Math.sin(-elapsedTime) * dorayakiRadius;
dorayakiGroup.rotation.x += 0.05;
```

Let the cookie
rotate around the
y-axis and orbit
around the cake

Let Dorayaki rotate around the x-axis
and revolve around the cake



Thank you for listening!